## LIST OF CONTENTS

## NUMBER 1 JULY


| | | |
|---|---|---|
| **Helga Tuschl**<br>**Rozika Kovac**<br>**Hans Altmann** | 1 | UDS and SCE in lymphocytes of persons occupationally exposed to low levels of ionizing radiation |
| **James J. Collins**<br>**Robert T. Lundy**<br>**Douglas Grahn** | 9 | A demographic model for performing site-specific health risk projections |
| **M. Sohrabpour**<br>**N. P. Saheli**<br>**P. Zarsav**<br>**D. Reza Esmaeeli** | 21 | Estimation of the genetically significant dose from diagnostic X-ray procedures in the Islamic Republic of Iran |
| **O. D. Markham**<br>**T. E. Hakonson**<br>**F. W. Whicker**<br>**J. S. Morton** | 31 | Iodine-129 in mule deer thyroids in the Rocky Mountain West |
| **J. A. Mewhinney**<br>**J. H. Diel** | 39 | Retention of inhaled $^{238}PuO_2$ in beagles: a mechanistic approach to description |
| **Steven A. Book** | 61 | Iodine-129 uptake and effects of lifetime feeding in rats |
| **Stella M. Swanson** | 67 | Levels of $^{226}Ra$, $^{210}Pb$ and $^{TOTAL}U$ in fish near a Saskatchewan uranium mine and mill |
| **W. A. Goldsmith**<br>**J. W. Poston**<br>**P. T. Perdue**<br>**M. O. Gibson** | 81 | Radon-222 and progeny measurements in "typical" East Tennessee residences |
| **C. Richard Cothern**<br>**William L. Lappenbusch** | 89 | Occurrence of uranium in drinking water in the U.S. |
| **M. A. Stuchly**<br>**M. H. Repacholi**<br>**D. W. Lecuyer** | 101 | Operator exposure to radiofrequency fields near a hyperthermia device |
| **Daniel F. Cahill** | 109 | A suggested limit for population exposure to radiofrequency radiation |
| **D. W. O. Rogers** | 127 | A nearly mono-energetic 6–7 MeV photon calibration source |

**Notes**

**M. S. Baxter**
**S. R. Aston** 139 Deep-ocean radioactive waste disposal: an evaluation of the seaweed critical pathway

**Philippe Hubert** 144 The low-dose controversy and radiological risk assessment

**Olabode T. Ogunleye** 149 Assessment of radiation dose to infants from breast milk following the administration of $^{99m}$Tc pertechnetate to nursing mothers

**S. K. Dua**
**P. Kotrappa**
**P. C. Gupta** 152 Influence of relative humidity on the charged fraction of decay products of radon and thoron

**R. W. Pollock**
**P. C. Philip**
**S. Jayaraman** 157 Sterilization of TLD finger monitors

**Virendra P. Gupta** 158 Response of an area albedo neutron dosimeter

**Masami Togo**
**Ikuro Anzai**
**Tomoko Togo** 162 Cesium-137 deposition in Japanese temporary residents of England

**Letters**

**D. Pearson** 167 Whole body cesium levels in man

**Victor E. Archer** 169 Radon daughter risks to miners and others

**Bernard L. Cohen** 171 Reply to Dr. Archer

**J. Czarnecki** 173 An interpretation method of TLD-environmental data

**J. A. Bonnell** 179 Stable iodine

**Geoffrey G. Eichholz** 180 Trivial dose levels

**D. T. Bartlett'** 181 Measurement of neutron dose equivalent from thermal energies up to 10 keV

**Book Reviews**

**John Wethington, Jr.** 183 Energy Deskbook by Samuel Glasstone

**Ralph H. Thomas** 183 Principles of Lasers by O. Svelto

**IRPA Abstracts** 185 South African Association of Physicists in Medicine and Biology—Group for Health Physics: Abstracts of papers presented at the meeting at Durban, South Africa, 17–19 March 1982

**HPS Abstracts** 191 Abstracts for the 28th Annual Health Physics Society Meeting in Baltimore, MD, 19–23 June 1983

**Erratum** 259

**News and Notices** 261

**Health Physics Society Prospectus** 269

**HPS Affiliate Members** 271

**NUMBER 2 AUGUST**

*SPECIAL ISSUE*

## INDOOR RADON

Preface 273

*Indoor Concentrations, Exposures and Risks*

A. V. Nero: Indoor radiation exposures from $^{222}$Rn and its daughters: a view of the issue 277

Thomas F. Gesell: Background atmospheric $^{222}$Rn concentrations outdoors and indoors: a review 289

A. V. Nero: Airborne radionuclides and radiation in buildings: a review 303

K. D. Cliff, A. D. Wrixon, B. M. R. Green and J. C. H. Miles: Radon daughter exposures in the U.K. 323

F. Steinhäusler, W. Hofmann, E. Pohl and J. Pohl-Rüling: Radiation exposure of the respiratory tract and associated carcinogenic risk due to inhaled radon daughters 331

C. T. Hess, C. V. Weiffenbach and S. A. Norton: Environmental radon and cancer correlations in Maine 339

*Source Characterization*

Bernd Kahn, Geoffrey G. Eichholz and Frank J. Clarke: Search for building materials as sources of elevated radiation dose 349

John G. Ingersoll: A survey of radionuclide contents and radon emanation rates in building materials used in the U.S. 363

Niels Jonassen: On the determination of radon exhalation rates 369

Geordie H. Zapalac: A time-dependent method for characterizing the diffusion of $^{222}$Rn in concrete 377

G. Sciocchetti, G. F. Clemente, G. Ingrao and F. Scacco: Results of a survey on radioactivity of building materials in Italy 385

*Surveys of Radon and Radon Daughter Concentration Indoors*

C. E. Roessler, G. S. Roessler and W. E. Bolch: Indoor radon progeny exposure in the Florida phosphate mining region: a review 389

A. C. George and J. Eng: Indoor radon measurements in New Jersey, New York and Pennsylvania 397

A. V. Nero, M. L. Boegel, C. D. Hollowell, J. G. Ingersoll and W. W. Nazaroff: Radon concentrations and infiltration rates measured in conventional and energy-efficient houses 401

Robert L. Fleischer, Antonio Mogro-Campero and Larry G. Turner: Indoor radon levels in the Northeastern U.S.: effects of energy efficiency in homes 407

A. C. George, E. O. Knutson and H. Franklin: Radon and radon daughter measurements in solar buildings 413

W. Chruscielewski, T. Domanski and W. Orzechowski: Concentrations of radon and its progeny in the rooms of Polish spas 421

**Notes**

H. Ward Alter and Richard A. Oswald: Results of indoor radon measurements using the Track Etch® method 425

Howard M. Prichard, Thomas F. Gesell, C. Thomas Hess, Conrad Weiffenbach and Philip Nyberg: Integrated radon data from dwellings in Maine and Texas 428

W. B. Johnson and P. G. Bailey: Study of radon daughter concentrations in Polk and Hillsborough counties 432

A. G. Scott: The distribution of average radon daughter concentrations in houses estimated from single-sample surveys 435

*Investigations of Radon Daughter Behavior*

A. C. George, E. O. Knutson and K. W. Tu: Radon daughter plateout—I. Measurements 439

E. O. Knutson, A. C. George, J. J. Frey and B. R. Koh: Radon daughter plateout—II. Prediction model 445

Gun Astri Swedjemark: The equilibrium factor $F$ 453

S. N. Rudnick, W. C. Hinds, E. F. Maher and M. W. First: Effect of plateout, air motion and dust removal on radon decay product concentration in a simulated residence 463

Ronald C. Bruno: Verifying a model of radon decay product behavior indoors 471

A. G. Scott: Radon daughter deposition velocities estimated from field measurements 481

Niels Jonassen: The effect of electric fields on $^{222}$Rn daughter products in indoor air 487

*Measurement Techniques*

Howard M. Prichard: A solvent extraction technique for the measurement of $^{222}$Rn at ambient air concentrations 493

Bernard L. Cohen and Ernest S. Cohen: Theory and practice of radon monitoring with charcoal adsorption 501

K. L. Revzan and W. W. Nazaroff: A rapid spectroscopic technique for determining the potential $\alpha$-energy concentration of radon decay products 509
W. W. Nazaroff, F. J. Offermann and A. W. Robb: Automated system for measuring air-exchange rate and radon concentration in houses 525

**Notes**
Philip C. Nyberg and David E. Bernhardt: Measurement of time-integrated radon concentrations in residences 539
Stephen W. Skinner and Philip C. Nyberg: Method for the calculation of radon response characteristics of integrating detectors 544
J. G. Ingersoll, B. D. Stitt and G. H. Zapalac: A fast and accurate method for measuring radon exhalation rates from building materials 550
Isabel M. Fisenne, Andreas George and Mark McGahan: Radon measurement intercomparisons 553
J. P. McLaughlin and N. Jonassen: The intercalibration of a radon daughter detection system with a radon detection system 556
R. A. Washington and W. J. Courneya: The measurement of low concentrations of radon in air 559

## NUMBER 3 SEPTEMBER

**Jacob I. Fabrikant** 575 Guest Editorial: Is nuclear energy an unacceptable hazard to health?

**Jacob I. Fabrikant** 579 Special Report: The effects of the accident at Three Mile Island on the mental health and behavioral responses of the general population and nuclear workers

**J. F. Acquavella, G. S. Wilkinson, G. L. Tietjen, C. R. Key, J. H. Stebbings, G. L. Voelz** 587 A melanoma case-control study at the Los Alamos National Laboratory

**Dean W. Broga, Marcus A. Gilbert** 593 A review of three incidents involving the release of $^{125}I$ from seeds interstitially implanted within the prostate gland

**Wayne A. Wiatrowski, David T. Kopp, Don W. Jordan, Fred Barragan** 599 Factors affecting radiation exposure and radiographic image contrast in urology

**Bruce Thomadsen, Jan van de Geijn, Dolores Buchler, Bhudatt Paliwal** 607 Fortification of existing rooms used for brachytherapy patients

| | | |
|---|---|---|
| **Darrell R. Fisher**<br>**Peter O. Jackson**<br>**Gwen G. Brodaczynski**<br>**Robert I. Scherpelz** | 617 | Levels of $^{234}U$, $^{238}U$ and $^{230}Th$ in excreta of uranium mill crushermen |
| **T. E. Myrick**<br>**B. A. Berven**<br>**F. F. Haywood** | 631 | Determination of concentrations of selected radionuclides in surface soil in the U.S. |
| **E. M. Romney**<br>**R. G. Lindberg**<br>**J. E. Kinnear**<br>**R. A. Wood** | 643 | $^{90}Sr$ and $^{137}Cs$ in soil and biota of fallout areas in Southern Nevada and Utah |
| **J. D. Cossairt** | 651 | Recent muon fluence measurements at Fermilab |
| **D. T. L. Jones**<br>**W. R. McMurray** | 659 | The neutron sensitivity of a Geiger–Müller counter between 0.5 and 8 MeV |
| **D. C. Kocher** | 665 | Dose-rate conversion factors for external exposure to photons and electrons |
| **Bernard L. Cohen** | 687 | Discounting in assessment of future radiation effects |
| **J. G. Szekely**<br>**K. A. Perry**<br>**A. Petkau** | 699 | Simulated responses to lognormally distributed continuous low radiation doses |
| **M. A. Stuchly**<br>**D. W. Lecuyer**<br>**R. D. Mann** | 713 | Extremely low frequency electromagnetic emissions from video display terminals and other devices |
| **Roger C. Grimson**<br>**Lisa A. Kammerman**<br>**Joseph Soukup** | 723 | Statistical procedures for assignments of upper bounds for radiation doses to an unbadged individual in a group for which some individuals are badged |
| **Charles W. Miller**<br>**F. Owen Hoffman** | 731 | An examination of the environmental half-time for radionuclides deposited on vegetation |
| **Douglas K. Halford,**<br>**O. Doyle Markham**<br>**Gary C. White** | 745 | Biological elimination rates of radioisotopes by mallards contaminated at a liquid radioactive waste disposal area |
| **Philippe Couchat**<br>**Michel Puard**<br>**Gérard Lasceve** | 757 | Tritiated water vapor exchange in sunflowers |
| **Notes** | | |
| **Jon A. Broadway**<br>**Ann B. Strong** | 765 | Radionuclides in human bone samples |

| | | |
|---|---|---|
| **David M. Taylor** | 768 | The comparative retention of bone-seeking radionuclides in the skeleton of rats |
| **M. A. Stuchly**<br>**M. H. Repacholi**<br>**D. W. Lecuyer**<br>**R. D. Mann** | 772 | Radiofrequency emissions from video display terminals |
| **R. Santini**<br>**P. Deschaux** | 775 | Incidence of low-level microwave irradiation on intestinal myoelectrical activity in the rat |
| **K. David Steidley** | 778 | An ultrasonic intrusion alarm for radiation areas |
| **John Hale**<br>**John W. Thomas** | 780 | Reciprocity law failure for a film-screen combination: Very long exposure times |
| **M. Krishna Gupta** | 783 | Exposure rate calculations for an Isomatrix X-ray therapy machine |
| **Reto Zach**<br>**Keith R. Mayoh** | 786 | Caloric contents of diets for environmental assessment models: A necessary condition |
| **Yowri Ujeno** | 789 | Relative biological effectiveness (RBE) of tritium $\beta$ rays in relation to dose rate |
| **Donald A. Cool**<br>**H. David Maillie** | 791 | Dissolution of tritiated glass microballoon fragments: Implications for inhalation exposure |
| **C. L. Sanders**<br>**J. A. Mahaffey** | 794 | Action of vitamin C on pulmonary carcinogenesis from inhaled $^{239}PuO_2$ |
| **P. B. Roberts** | 798 | Heritable cancer and radiation risks |
| **A. T. Keane**<br>**D. R. Brewster** | 801 | Calibration of a decay-product collection and counting apparatus for the determination of exhaled thoron |
| **Werner Hofmann** | 805 | Some comments on *ICRP Publication* 32 |
| **Letters to the Editors** | | |
| **Carl J. Johnson** | 809 | Epidemiologic investigation of cancer incidence in people living near nuclear installations |
| **Nancy A. Dreyer**<br>**Naomi H. Harley** | 814 | Reply to Dr. Johnson |
| **Phillip S. Rummerfield** | 815 | More on generator linearity of diagnostic X-ray equipment |
| **Kenneth E. Weaver** | 816 | Still more on generator linearity of diagnostic X-ray equipment |

| | | |
|---|---|---|
| **Norman Rohrig** | 817 | Plotting neutron fluence spectra |
| **Bengt E. Bjarngard**<br>**Kenneth R. Kase** | 818 | Plural of units |
| **T. R. Crites** | 819 | Regarding units and regular plurals |
| **Daniel J. Strom**<br>**James E. Watson Jr.**<br>**Paul S. Stansbury** | 820 | Reply to letter by Dr. Bjarngard and Dr. Kase |
| **Book Reviews**<br>**Kenneth R. Kase** | 821 | *Radiation Therapy Physics* by William R. Hendee |
| **William R. Hendee** | 822 | *Radiation Protection in Pediatric Radiology, NCRP Report No.* 68 |
| **Jane M. Orient** | 823 | A critique of the statistical methodology in *Radiation and Human Health* by John W. Gofman |
| **Ralph H. Thomas** | 827 | *Critical Issues in Setting Radiation Dose Limits. Proceedings of the NCRP* |
| **Ralph H. Thomas** | 829 | *Ninth International Conference on Cyclotrons and Their Applications*, edited by G. Gendreau |
| **Sheldon Wolff** | 829 | *How Well Can We Assess Genetic Risk? Not Very* by James F. Crow |
| **Steve J. St. Lorant** | 830 | *Biomagnetism. Proceedings of the Third International Workshop on Biomagnetism*, edited by S. N. Erne, H.-D. Hahlbohm and H. Lübbig |
| **Health Physics Society Prospectus** | 833 | |
| **Health Physics Society Affiliate Members** | 835 | |


**NUMBER 4 OCTOBER**

## *SPECIAL ISSUE*

### 1976 HANFORD AMERICIUM EXPOSURE INCIDENT


| | |
|---|---|
| Dedication to Harold R. McCluskey | v |
| R. C. Thompson: Overview and perspective | 837 |
| B. J. McMurray: Accident description | 847 |

B. D. Breitenstein: Medical management and chelation therapy 855
W. R. Brown: Psychological aspects 867
J. J. Jech, J. R. Berry and B. D. Breitenstein: External decontamination procedures 873
J. R. Berry, B. J. McMurray, J. J. Jech, B. D. Breitenstein and E. J. Quigley: Decontamination and treatment facility 883
H. E. Palmer, G. A. Rieksts and E. E. Icayan: *In vivo* measurements 893
B. Robinson, K. R. Heid, T. L. Aldridge and R. D. Glenn: Organ burden and radiation dose estimates 911
H. A. Ragan, J. A. Mahaffey and B. D. Breitenstein: Hematologic effects 923
J. C. Hampton: Histologic and autoradiographic observations on skin 933
D. R. Kalkwarf, V. W. Thomas Jr., K. K. Nielson and M. L. Mauch: Urinary excretion of trace metals during DTPA treatment 937

## NUMBER 5 NOVEMBER

**Einar Sagstuen, Håkon Theisen, Thormod Henriksen** 961 Dosimetry by ESR spectroscopy following a radiation accident

**Fred G. Abrath, Julia Bello, James A. Purdy** 969 Attenuation of primary and scatter radiation in concrete and steel for 18 MV X-rays from a CLINAC-20 linear accelerator

**E. Lynn McGuire, Max L. Baker, James F. Vandergrift** 975 Evaluation of radiation exposures to personnel in fluoroscopic X-ray facilities

**George M. Kanapilly, John A. Stanley, George J. Newton, Brian A. Wong, Phillip B. DeNee** 981 Characterization of an aerosol sample from the auxiliary building of the Three Mile Island reactor

*Notes*

**Howard M. Prichard, Thomas F. Gesell** 991 Radon-222 in municipal water supplies in the central United States

**Charles Roux, Cecilia Horvath, Rolande Dupuis** 993 Effects of pre-implantation low-dose radiation on rat embryos

**C. D. Berger, B. H. Lane, T. Hamrick** 999 Clearance of $^{202}$Tl contaminate following intravenous injection of $^{201}$Tl

**R. P. Rao, D. R. Rao** 1001 A new X-ray TLD phosphor

*Letters*

**C. S. Sims**
**G. R. Patterson Jr.** 1003 Reference dosimetry for the health physics research reactor

**C. Richard Cothern**
**William L. Lappenbusch** 1005 Comments on Note by Lal *et al.*

**N. Lal**
**Y. P. Sharma**
**P. K. Sharma**
**I. M. Talwar**
**K. K. Nagpaul**
**S. K. Chakarvarti** 1006 Reply to Cothern and Lappenbusch regarding the note 'Uranium assay in milk'

**Bernard L. Cohen** 1007 Health effects of cadmium wastes

*Book Reviews*

**J. R. A. Lakey** 1009 *Radiation Protection Quantities for External Exposure* by G. Burger *et al.*

**Allan G. Duncan** 1010 *Management of Plutonium Contaminated Waste* by J. R. Grover

**News and Notices** 1011

**Health Physics Society Prospectus** 1019

**Health Physics Society Affiliate Members** 1021

**NUMBER 6 DECEMBER**

**Arthur F. Eidson**
**James A. Mewhinney** 1023 *In vitro* dissolution of respirable aerosols of industrial uranium and plutonium mixed-oxide nuclear fuels

**Bente Lauridsen**
**Per Hedemann Jensen** 1039 Shielding factors for vehicles to $\gamma$ radiation from activity deposited on structures and ground surfaces

*Notes*

**George A. Sehmel** 1047 A relationship between plutonium activity densities of airborne and surface soils

**Robert C. McIlhenny**
**Ronald M. Knaus** 1050 Establishment of a field plot to study the behavior of cesium-137 in the environment

*Letters*

**S. R. Wagner** 1053 A plea for international standardization and the international system of units

**Harold Marcus** 1053 A mobile radiation source—contaminated cockroaches

**News and Notices** 1055

**Health Physics Society Prospectus** 1063

**Errata** 1064

**HPS Affiliate Members** 1065

**List of 1982–83 Journal Reviewers** 1067

**List of Contents for Vol. 45** i

**Author Index for Vol. 45** xiii

**Subject Index for Vol. 45** xv